BEST AVAILABLE COPY



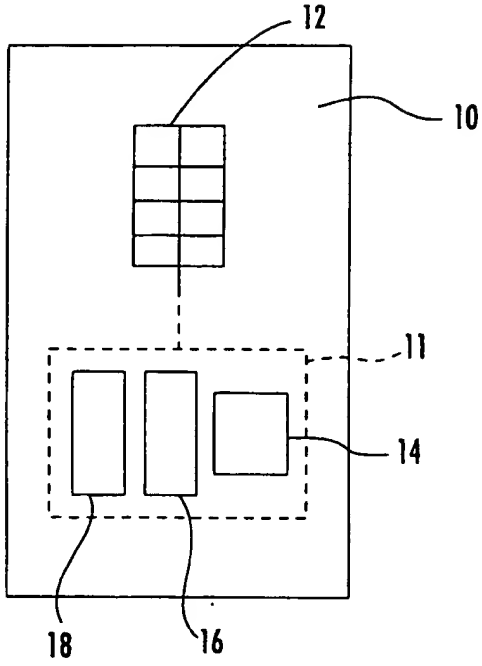


FIG. 1.

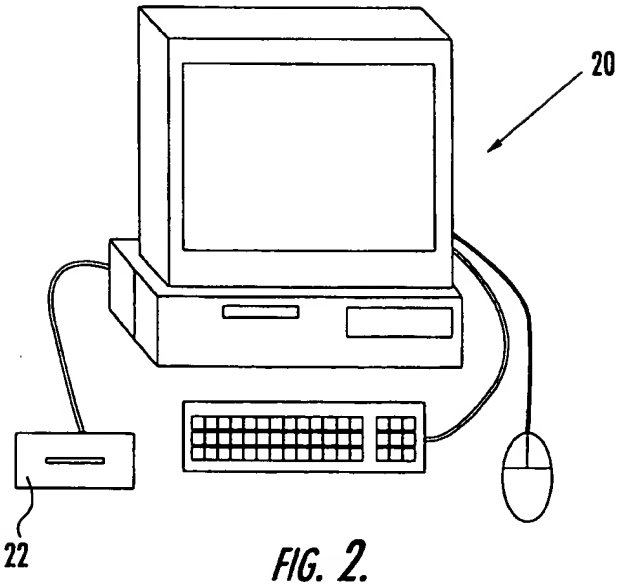


FIG. 2.

BEST AVAILABLE COPY



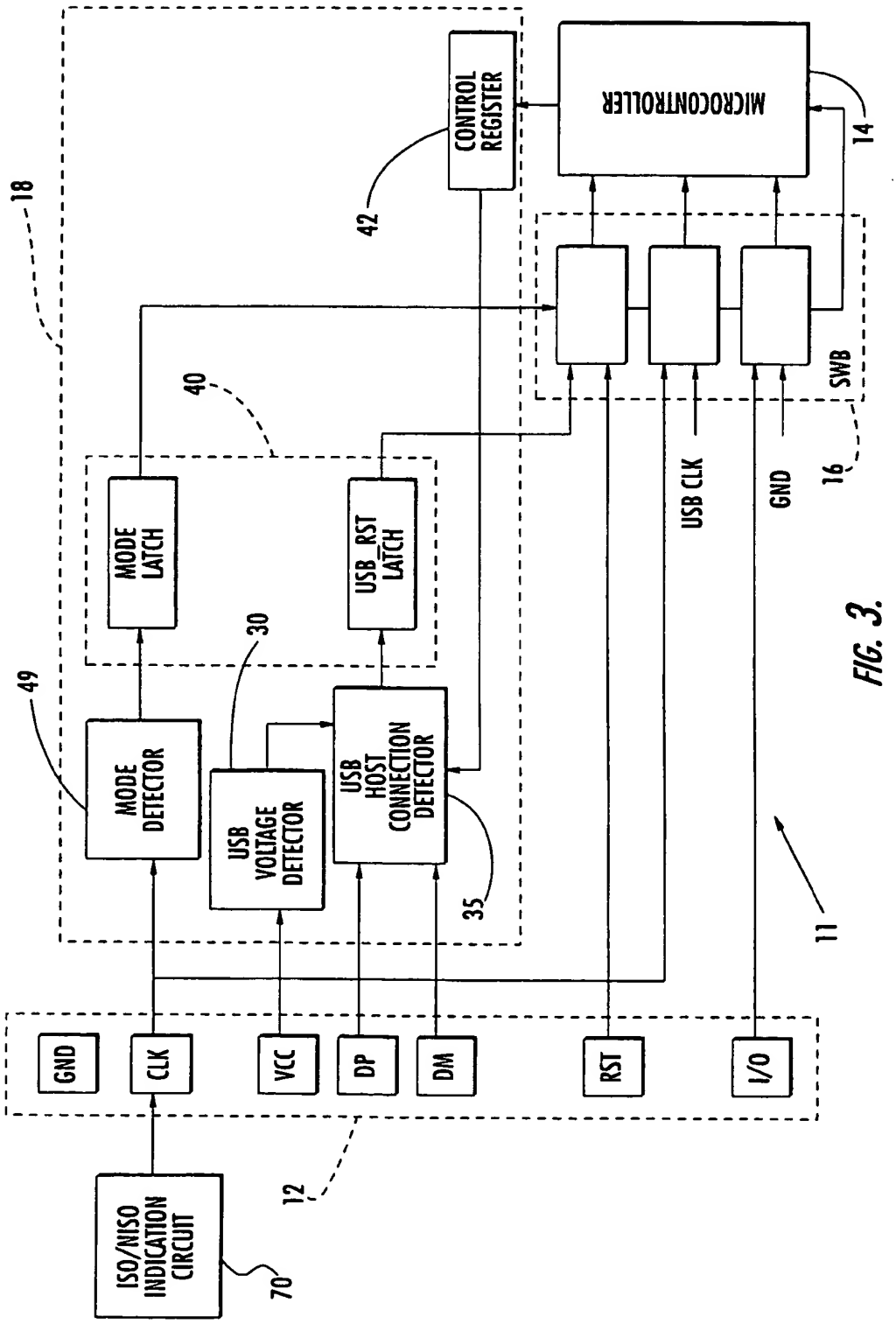


FIG. 3.

BEST AVAILABLE COPY



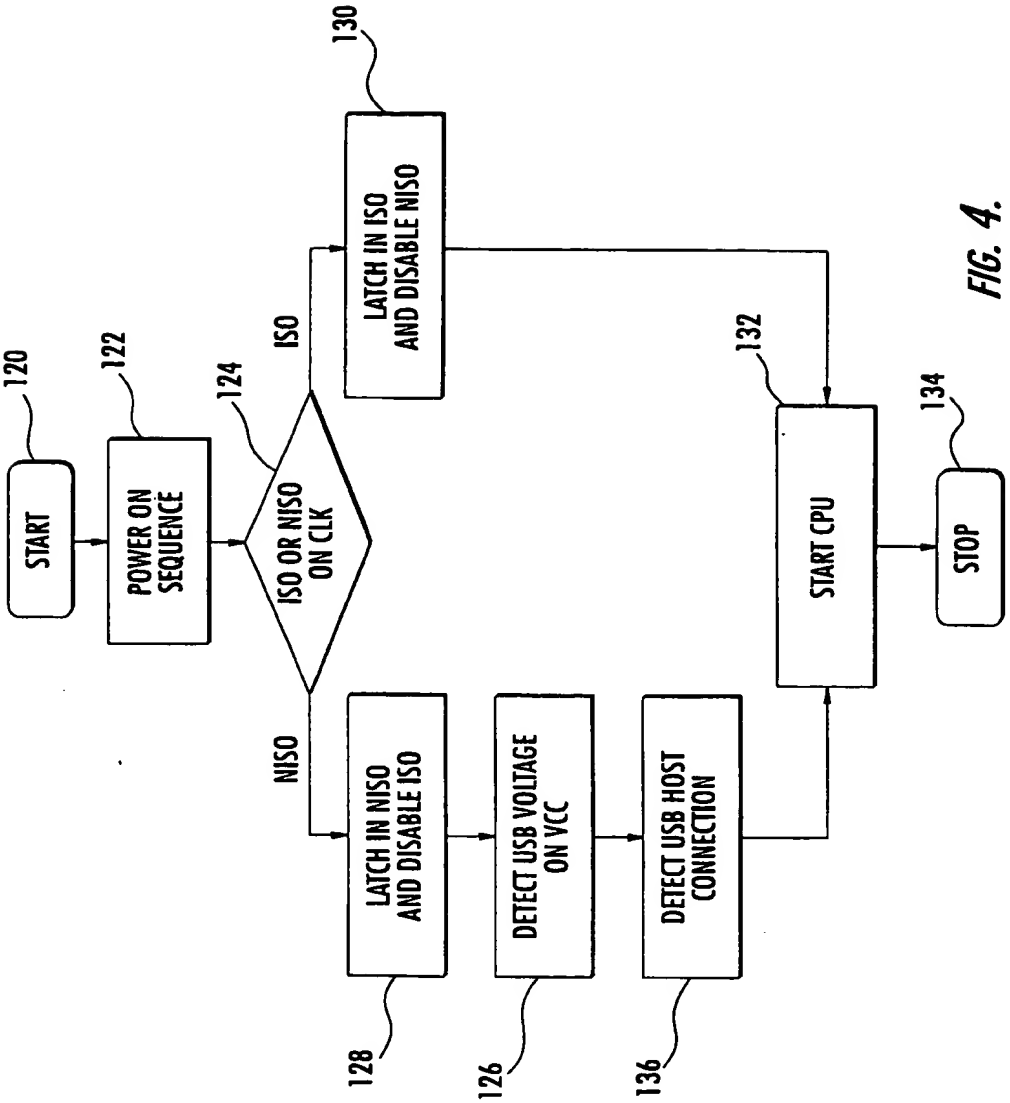


FIG. 4.

BEST AVAILABLE COPY



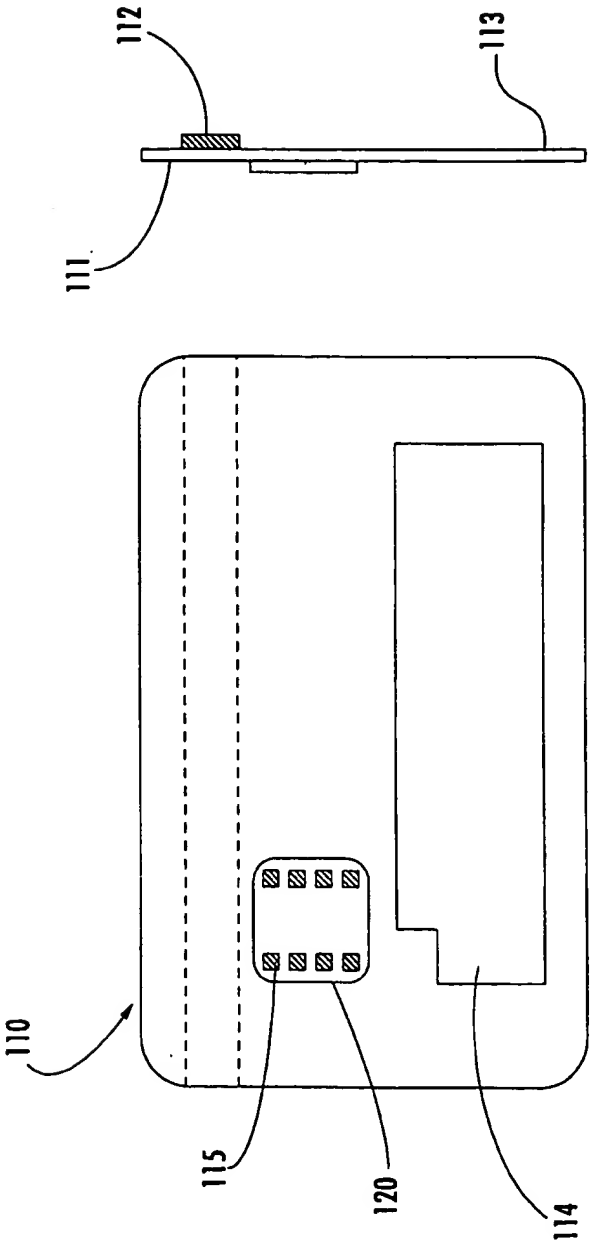


FIG. 5.

BEST AVAILABLE COPY



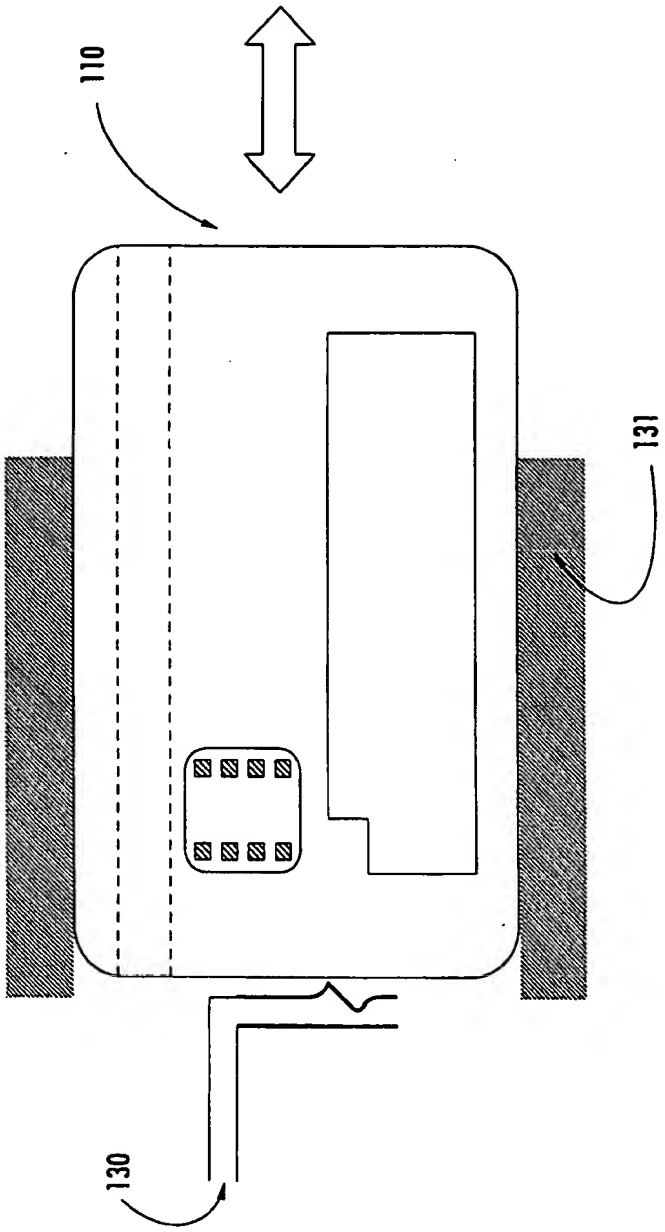


FIG. 6.

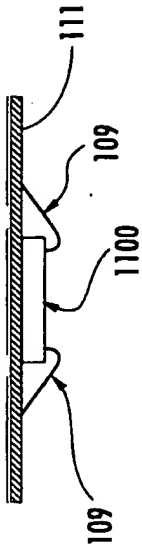


FIG. 7B.

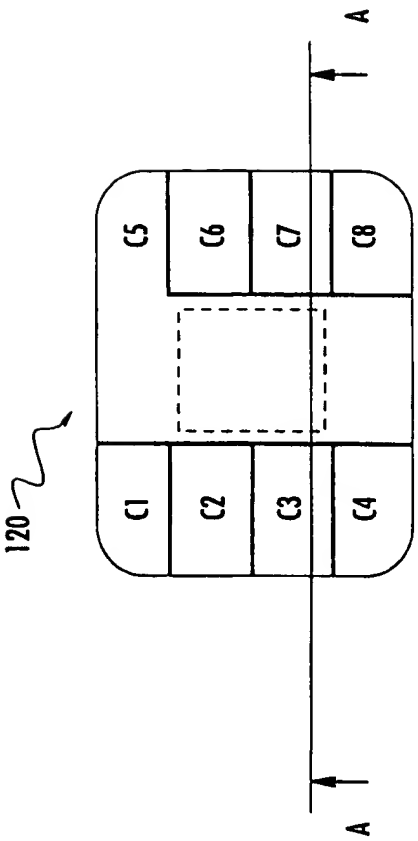


FIG. 7A.

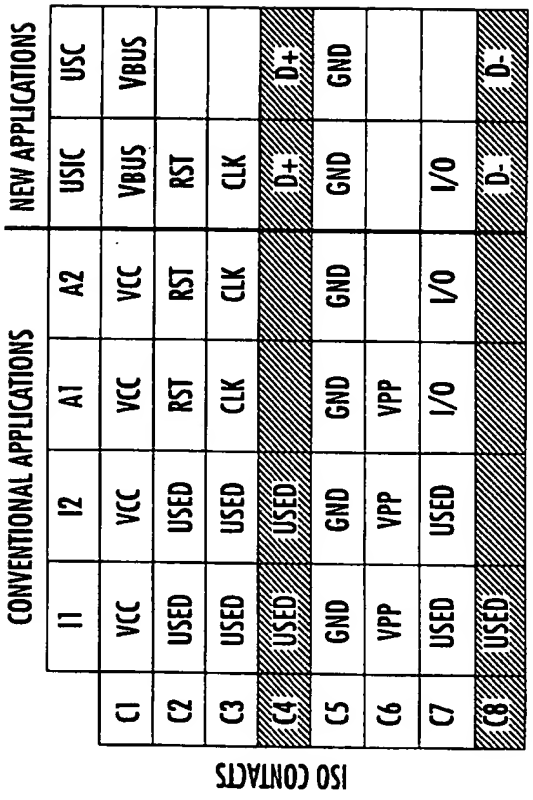
CONVENTIONAL APPLICATIONS
NEW APPLICATIONS
ISO CONTACTS
C1 C2 C3 C4 C5 C6 C7 C8
I1 I2 A1 A2 USIC USC
VCC VCC VCC VCC VBUS VBUS
USED USED RST RST RST
USED USED CLK CLK CLK
USED USED USED D+ D+
GND GND GND GND GND
VPP VPP VPP
USED USED I/O I/O I/O
USED USED D- D-

FIG. 8.

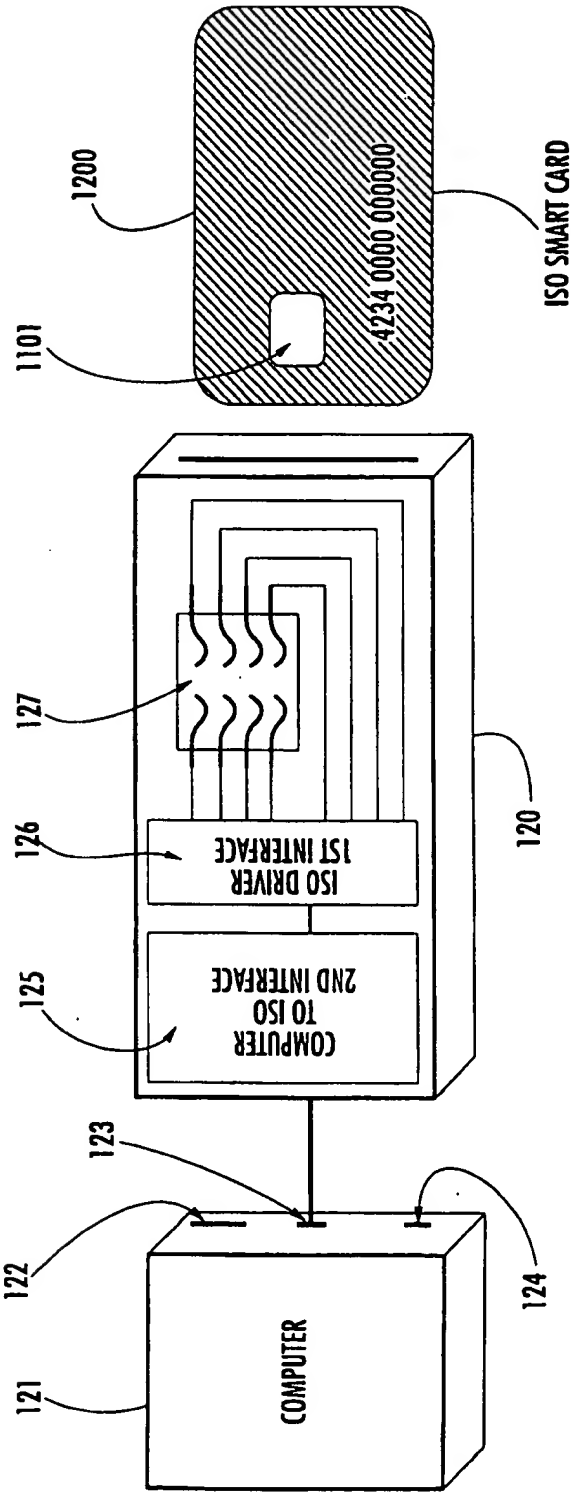


FIG. 9.
PRIOR ART

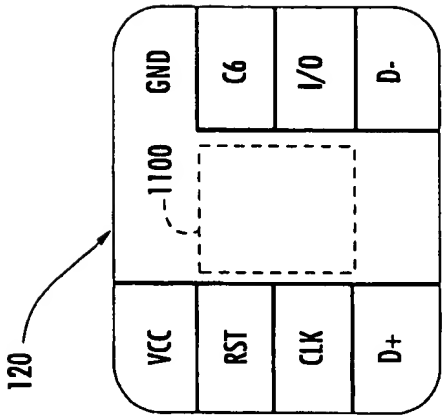


FIG. 10.

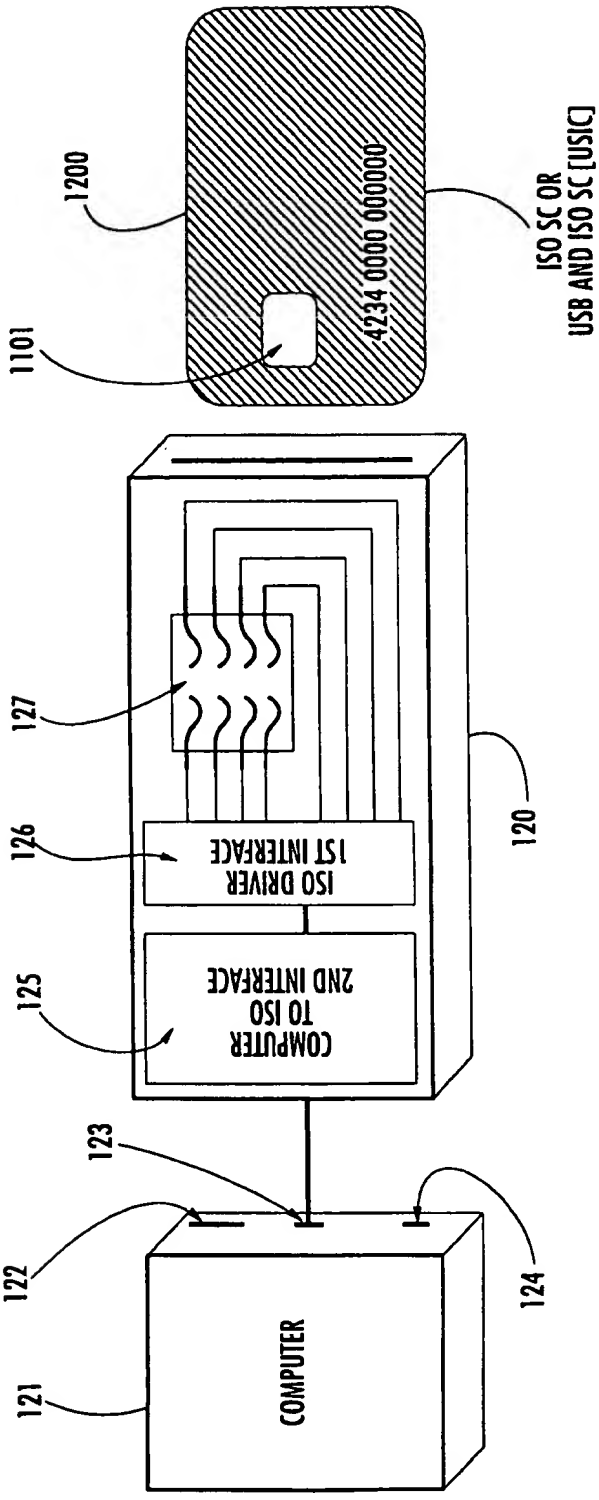
1200
1101
4234 0000 000000
ISO SC OR
USB AND ISO SC [USIC]
127
126
ISO DRIVER
1ST INTERFACE
120
125
COMPUTER
TO ISO
2ND INTERFACE
123
122
124
121
COMPUTER

FIG. 11.

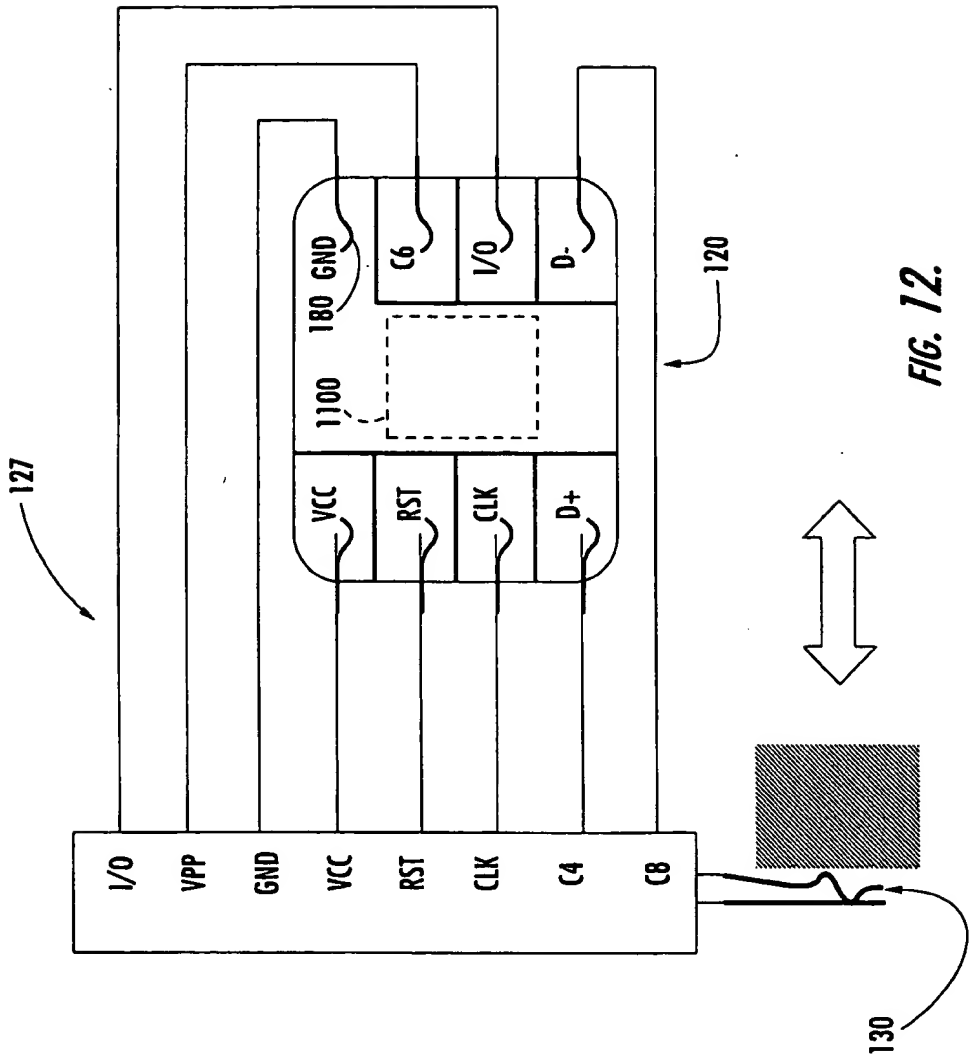
127
120
180
GND
C6
I/O
D-
1100
VCC
RST
CLK
D+
I/O
VPP
GND
VCC
RST
CLK
C4
C8
130

FIG. 12.

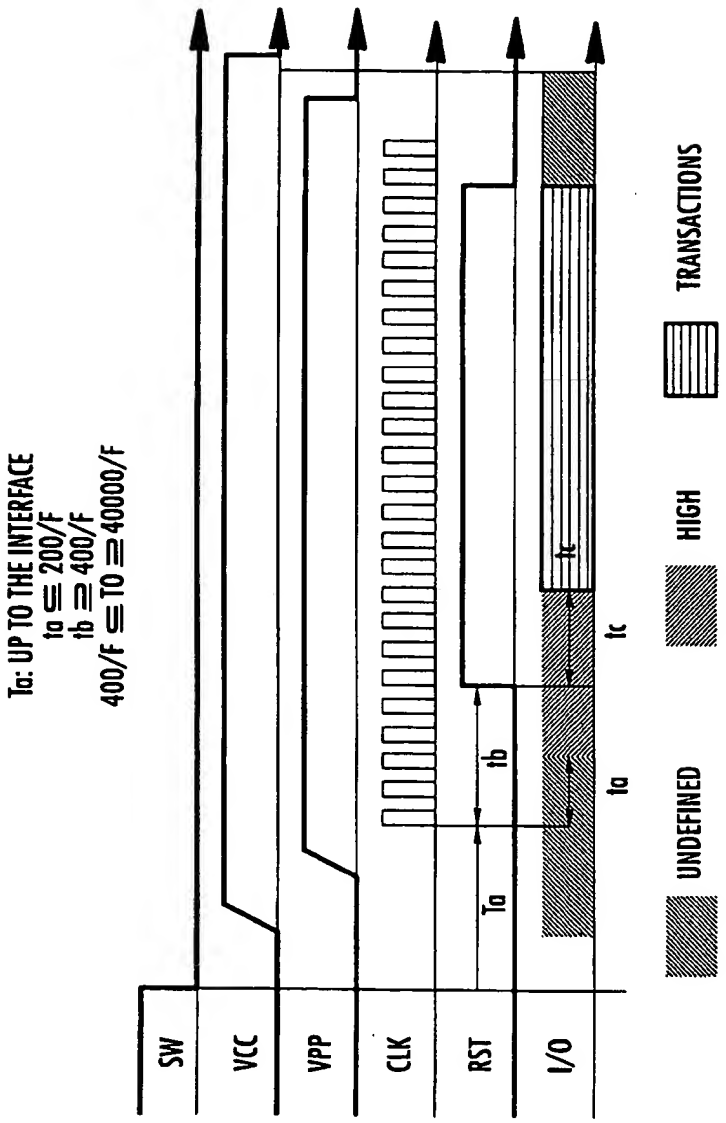
Ta: UP TO THE INTERFACE
ta ≦ 200/F
tb ≧ 400/F
400/F ≦ TO ≧ 40000/F
SW
VCC
VPP
CLK
RST
I/O
Ta
tb
ta
tc
tc
UNDEFINED
HIGH
TRANSACTIONS

FIG. 13.

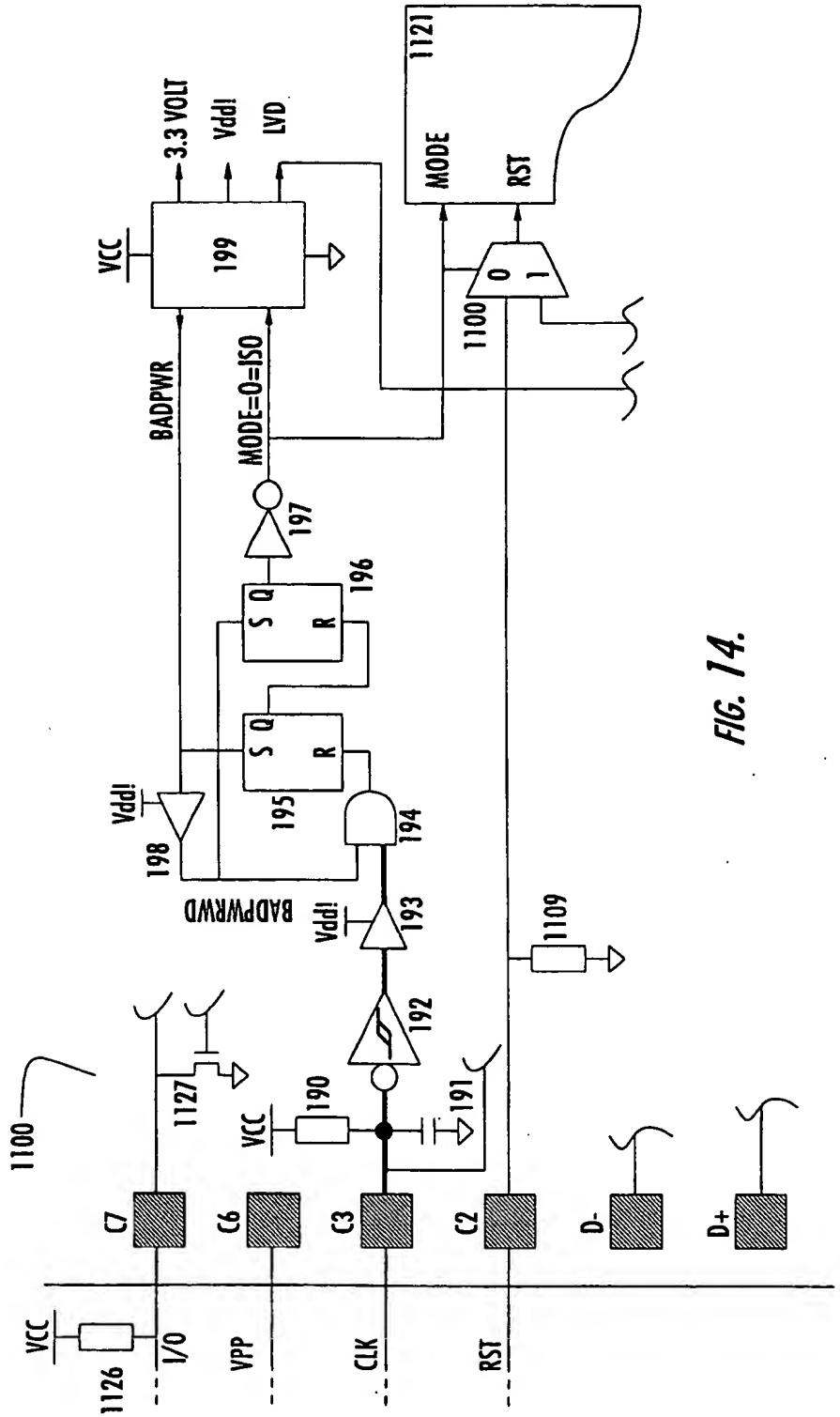
1121
MODE
RST
3.3 VOLT
Vddl
LVD
VCC
199
0
1
1100
BADPWR
MODE=0=ISO
197
196
S Q
R
195
194
198
Vddl
BADPWRD
193
1109
192
1127
190
191
VCC
1100
C7
C6
C3
C2
D-
D+
VCC
1126
I/O
VPP
CLK
RST

FIG. 14.

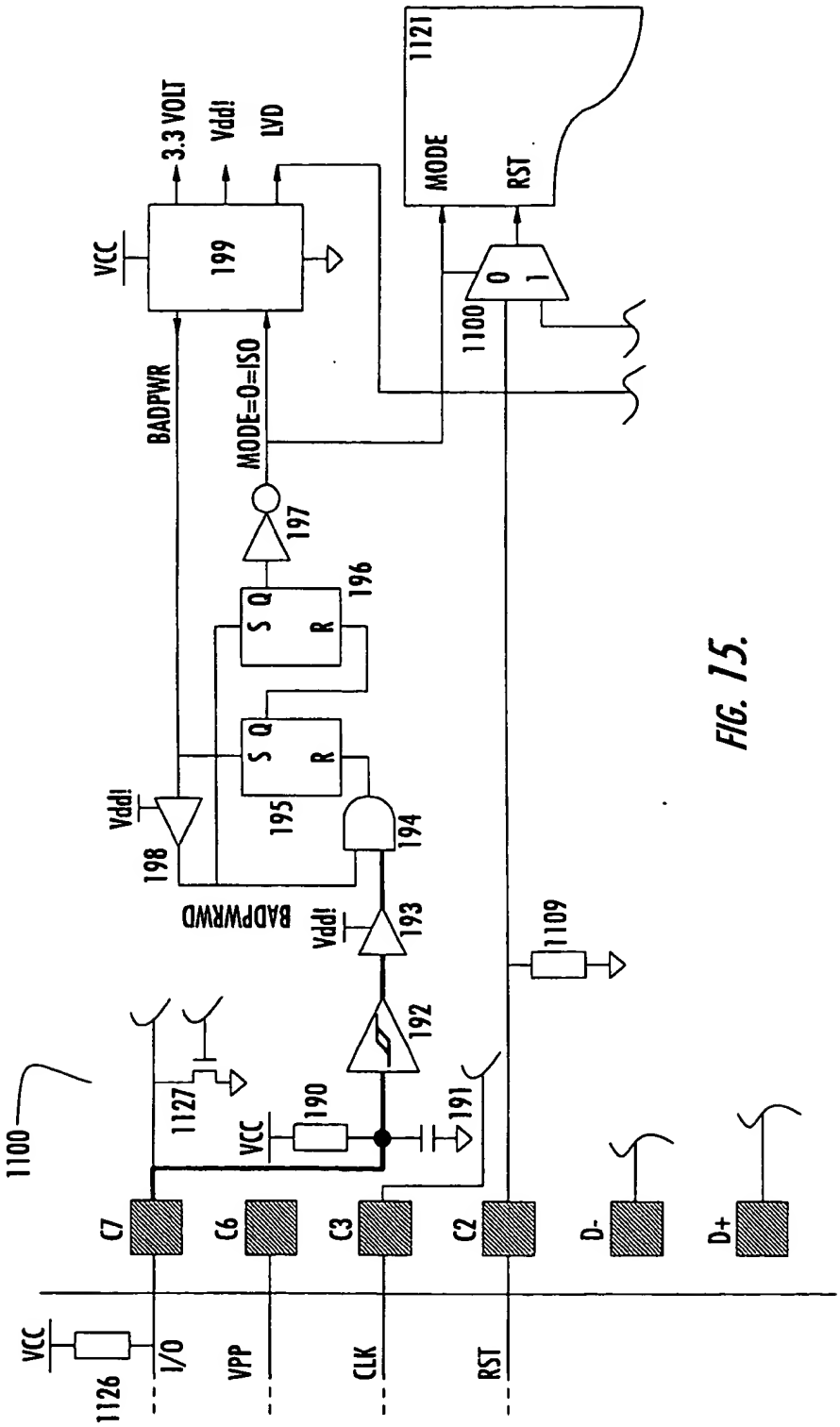
1121
MODE
RST
3.3 VOLT
Vdd!
LVD
VCC
199
1100
0
1
BADPWR
MODE=0=ISO
197
196
S Q
R
195
194
198
Vdd!
BADPWRWD
193
Vpp!
192
1109
1127
VCC
190
191
1100
C7
C6
C3
C2
D-
D+
VCC
1126
I/O
VPP
CLK
RST

FIG. 15.

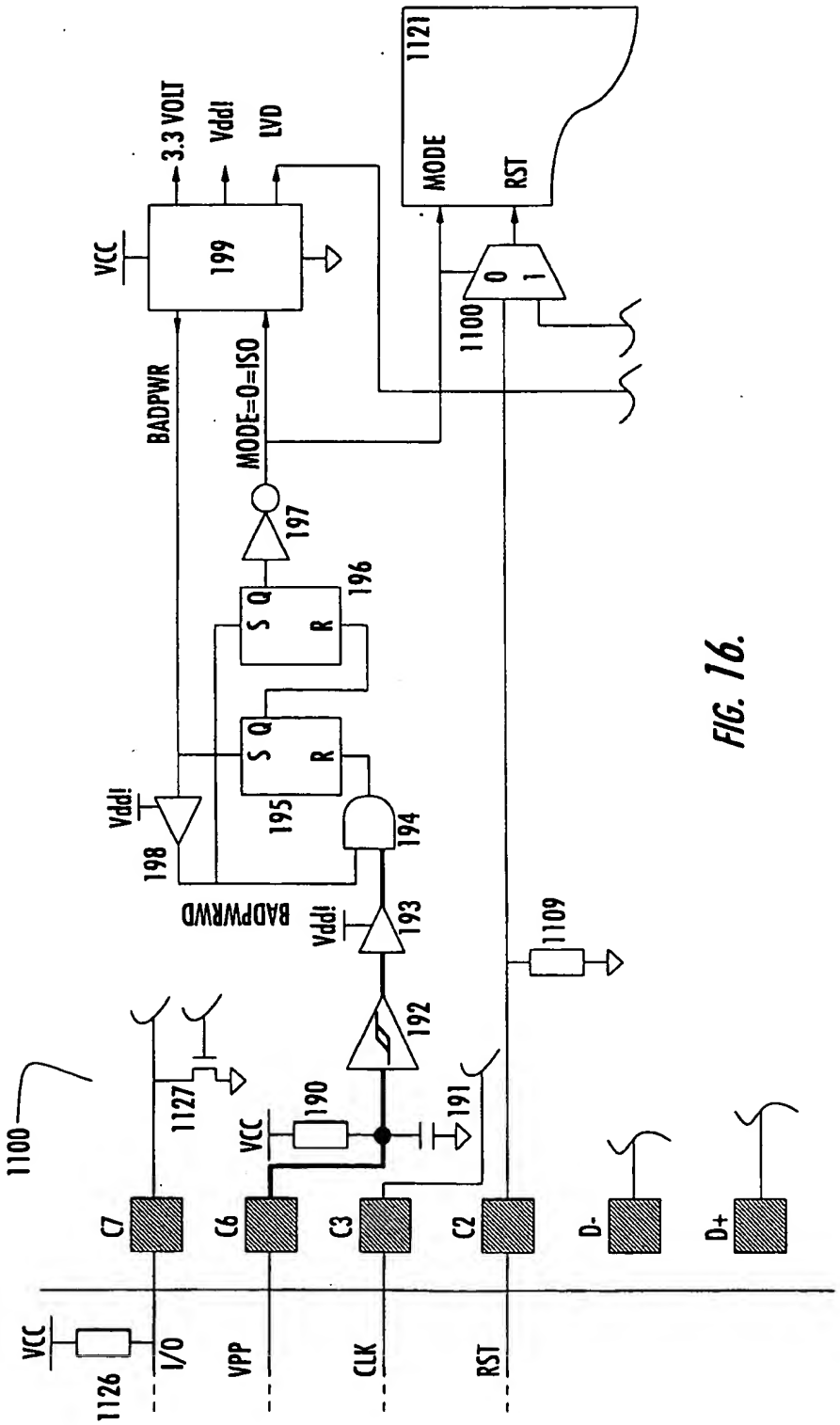
1121
MODE
RST
3.3 VOLT
Vdd!
LVD
VCC
199
1100
0
1
BADPWR
MODE=0=ISO
197
196
S Q
R
195
194
198
Vpp!
BADPWRD
193
192
1109
1127
190
191
VCC
1100
C7
C6
C3
C2
D-
D+
VCC
1126
I/O
VPP
CLK
RST

FIG. 16.

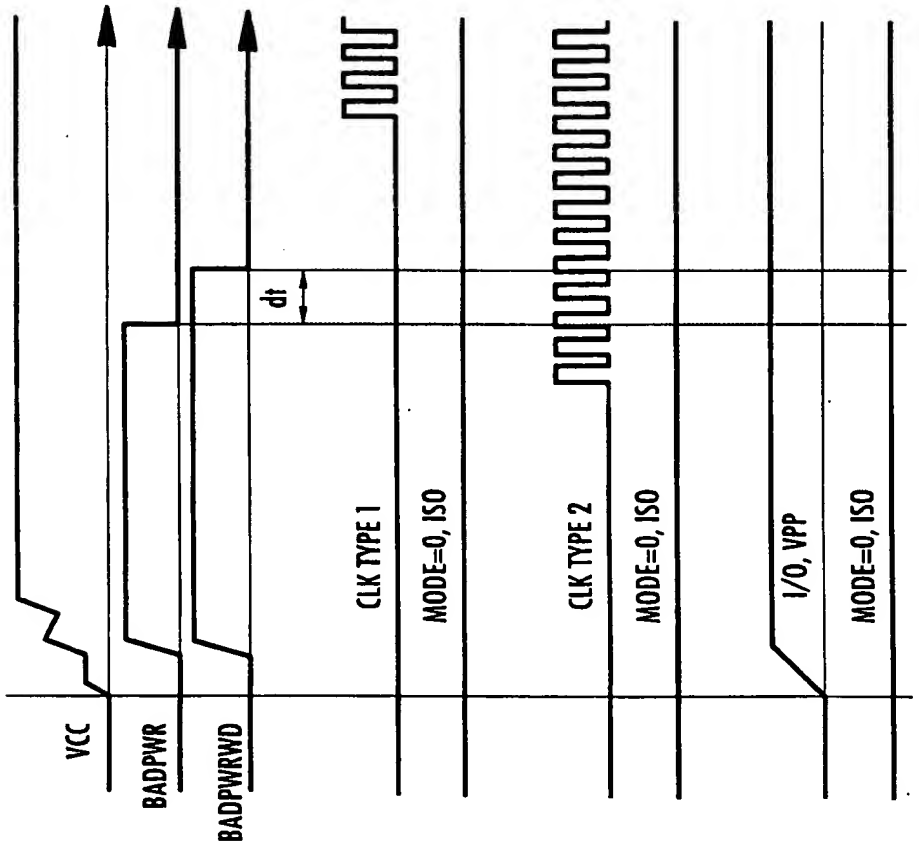
VCC
BADPWR
BADPWRWD
dt
CLK TYPE 1
MODE=0, ISO
CLK TYPE 2
MODE=0, ISO
I/O, VPP
MODE=0, ISO

FIG. 17.

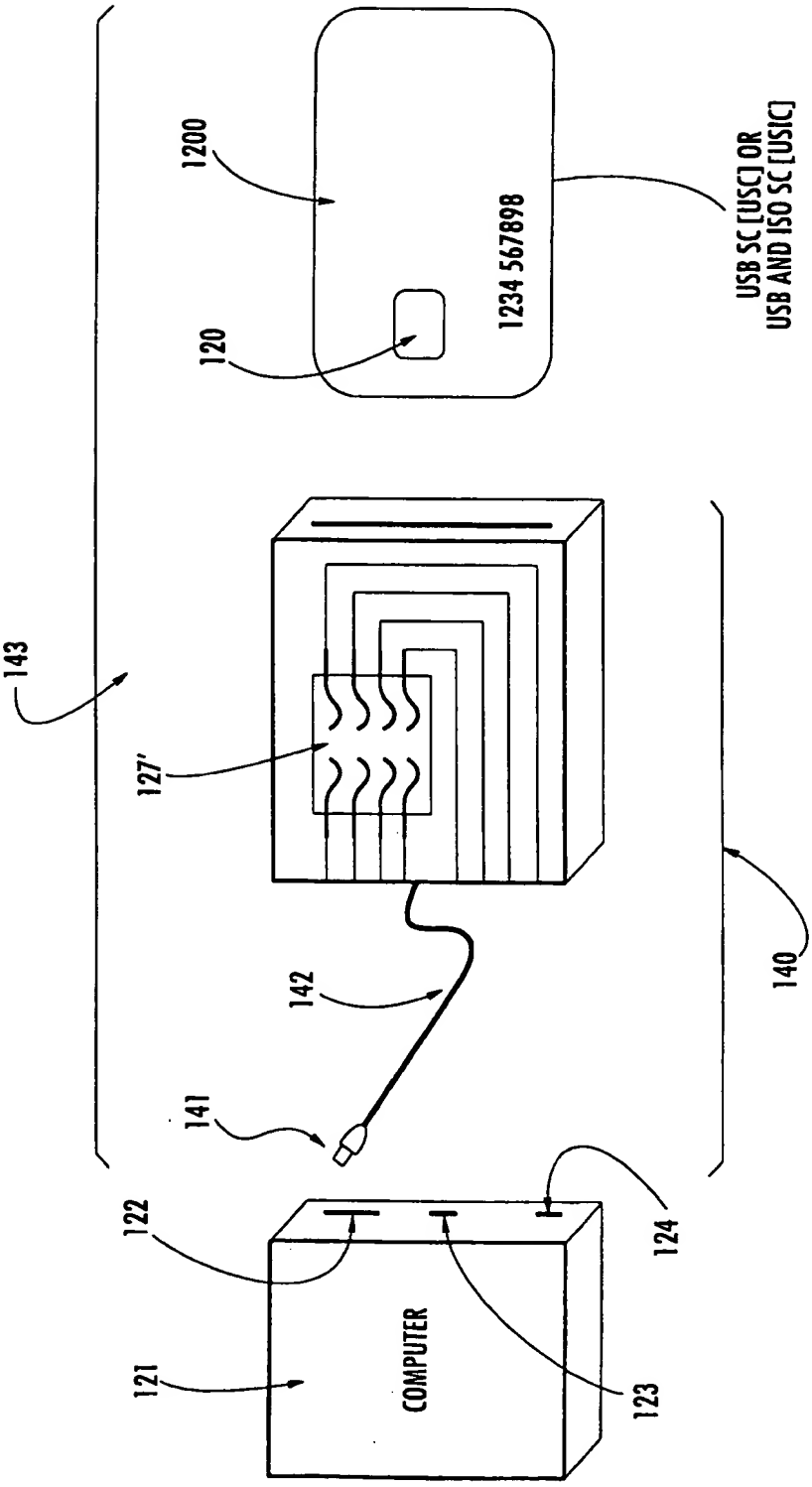
1200
1234 567898
USB SC [USC] OR
USB AND ISO SC [USIC]
120
143
127'
142
141
140
122
124
COMPUTER
121
123

FIG. 18.

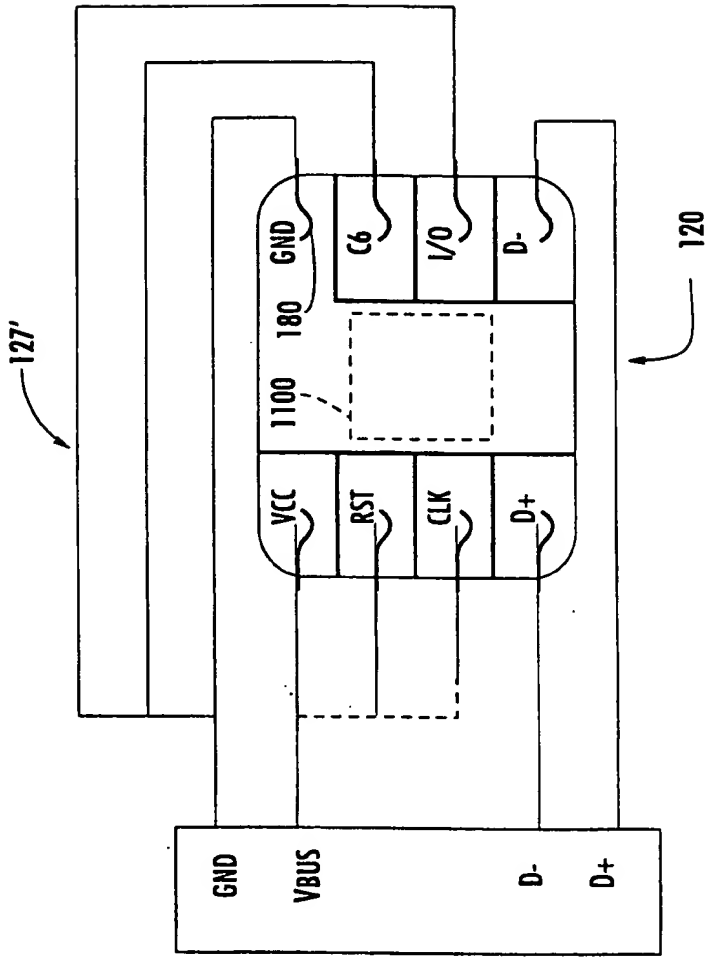


FIG. 19.

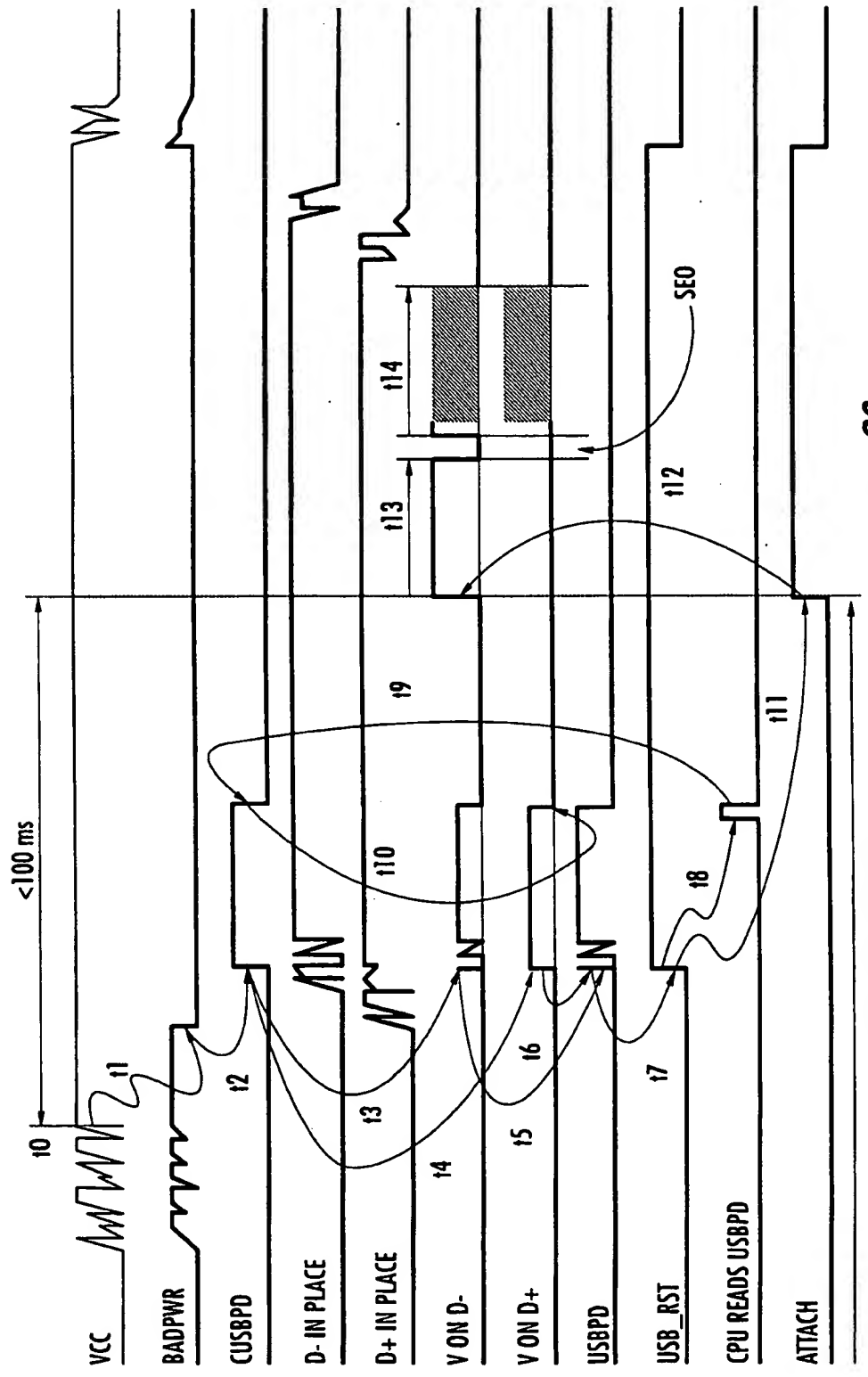
VCC
BADPWR
CUSBPD
D- IN PLACE
D+ IN PLACE
V ON D-
V ON D+
USBPD
USB_RST
CPU READS USBPD
ATTACH
<100 ms
t10
t11
t12
t13
t14
t15
t16
t17
t18
t19
t110
t111
t112
t113
t114
SE0
EQUIVALENT IN ISO TO SW OPEN

FIG. 20.

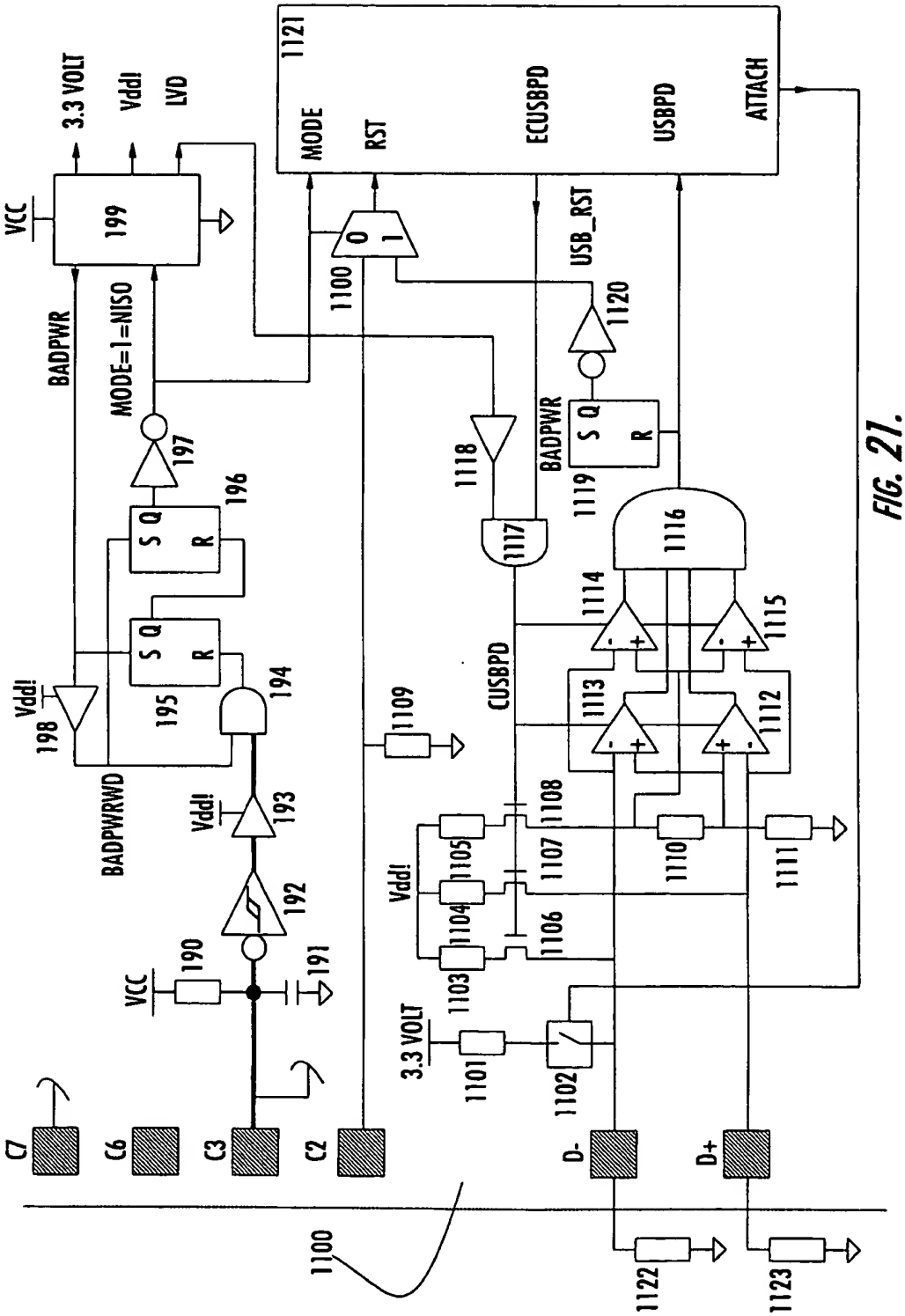
1121
MODE
RST
ECUSBPD
USBPD
ATTACH
3.3 VOLT
Vdd!
LVD
VCC
199
BADPWR
MODE=1=NISO
1100
0
1
USB_RST
1120
1118
BADPWR
S Q
R
1119
197
196
195
194
1117
1116
1114
1115
1113
1112
CUSBPD
198
Vdd!
1109
BADPWRWD
193
192
190
191
1108
1107
1105
1104
1106
1103
1110
1111
3.3 VOLT
1101
1102
C7
C6
C3
C2
D-
D+
1100
1122
1123

FIG. 27.

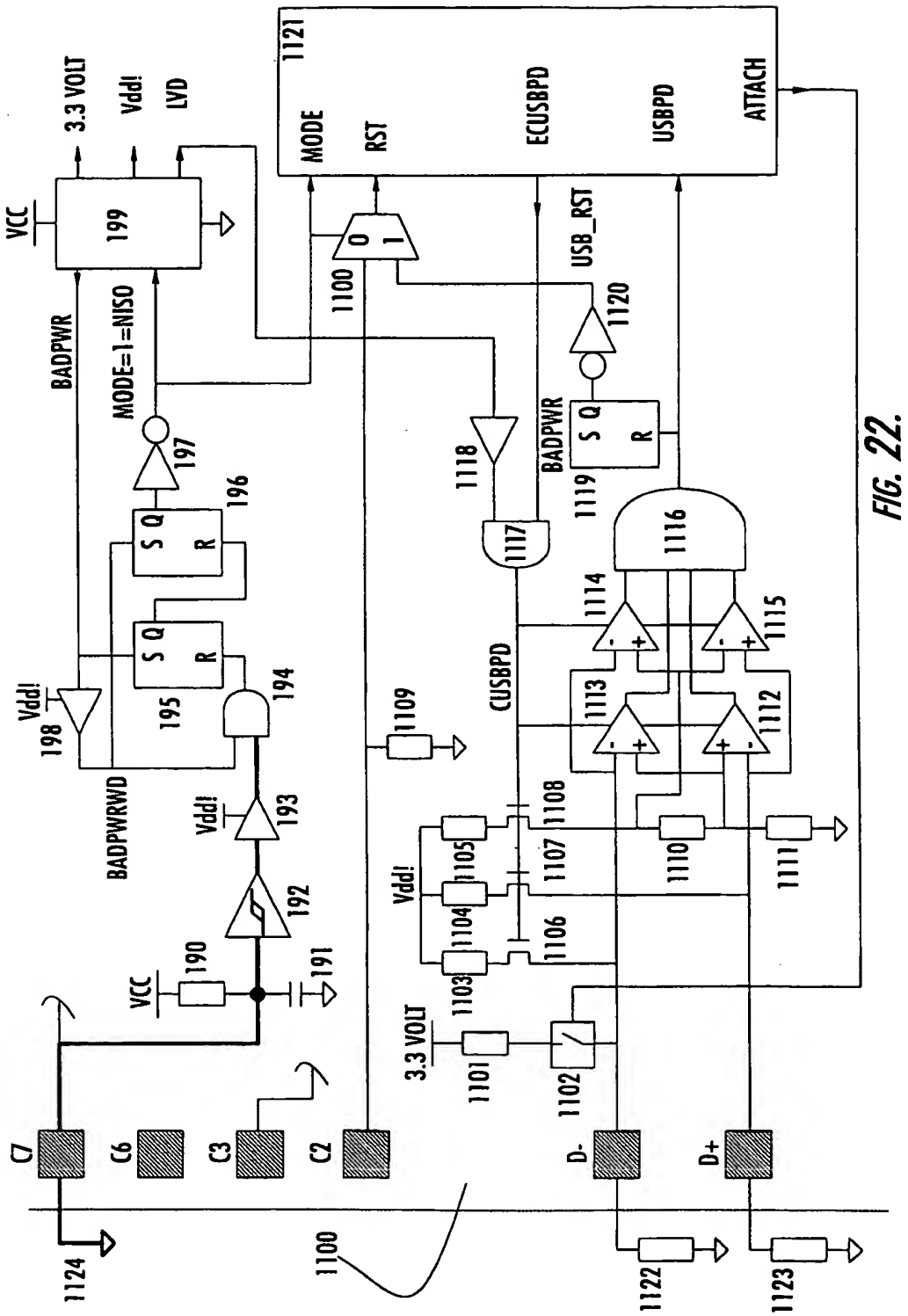
1121
MODE
RST
ECUSBPD
USBPD
ATTACH
3.3 VOLT
Vdd!
LVD
VCC
199
0
1
1100
USB_RST
1120
BADPWR
MODE=1=NISO
197
1118
BADPWR
S Q
R
1119
196
1116
1117
S Q
R
1114
1115
CUSBPD
1113
1112
Vdd!
198
195
194
1109
BADPWRWD
Vdd!
193
1108
1105
1107
1110
1111
192
Vdd!
1104
1106
190
191
VCC
1103
3.3 VOLT
1101
1102
C7
C6
C3
C2
D-
D+
1124
1100
1122
1123

FIG. 22.

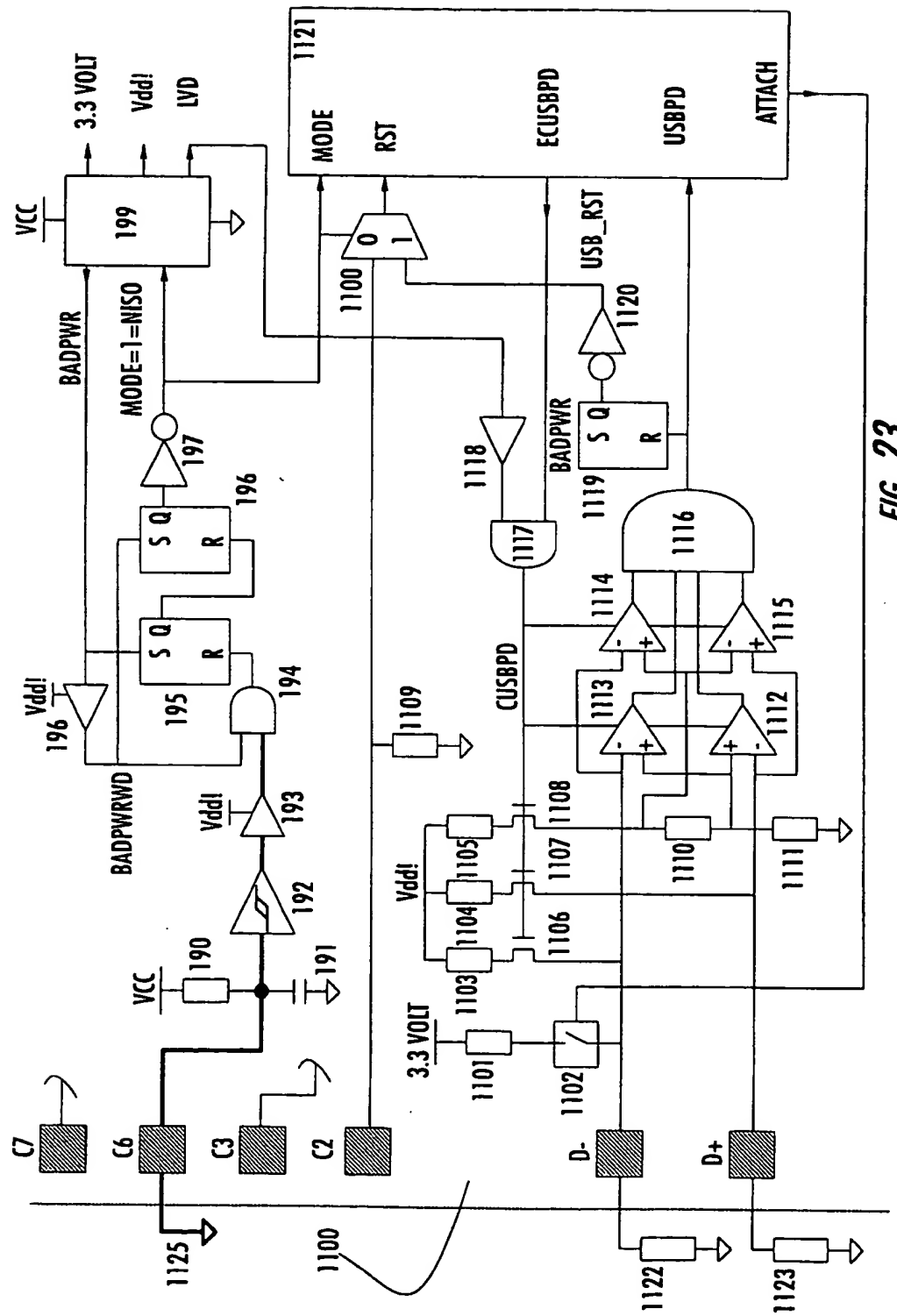
1121
MODE
RST
ECUSBPD
USBPD
ATTACH
3.3 VOLT
Vdd!
LVD
VCC
199
0
1
1100
USB_RST
1120
BADPWR
MODE=1=NISO
197
1118
BADPWR
S Q
R
1119
196
1116
1117
1114
1115
CUSBPD
1113
1112
Vdd!
196
195
194
1109
BADPWRWD
Vdd!
193
1108
1105
1107
1110
1111
Vdd!
192
1104
1106
VCC
190
191
1103
3.3 VOLT
1101
1102
C7
C6
C3
C2
D-
D+
1125
1100
1122
1123

FIG. 23.

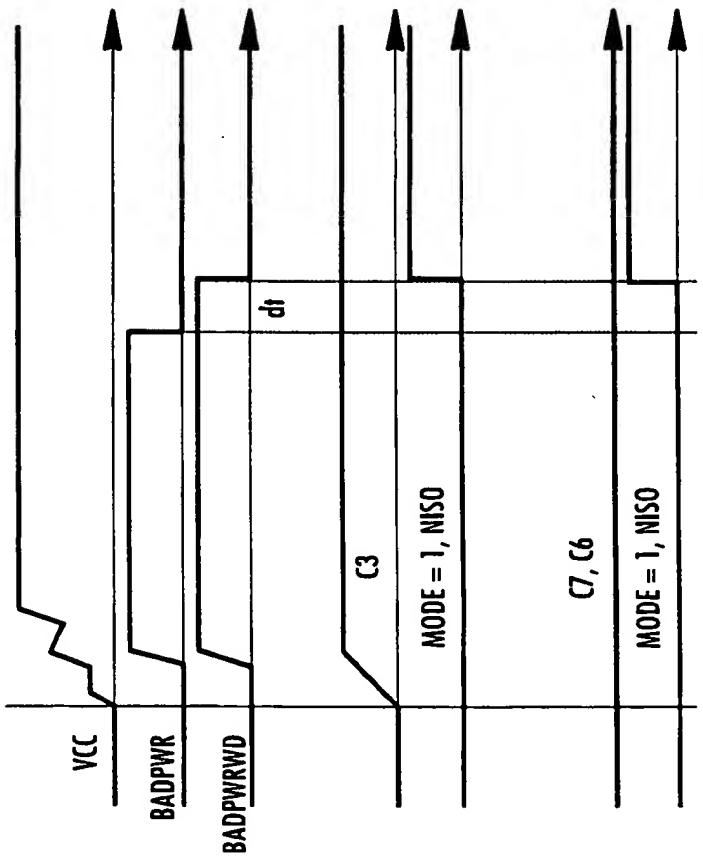


FIG. 24.

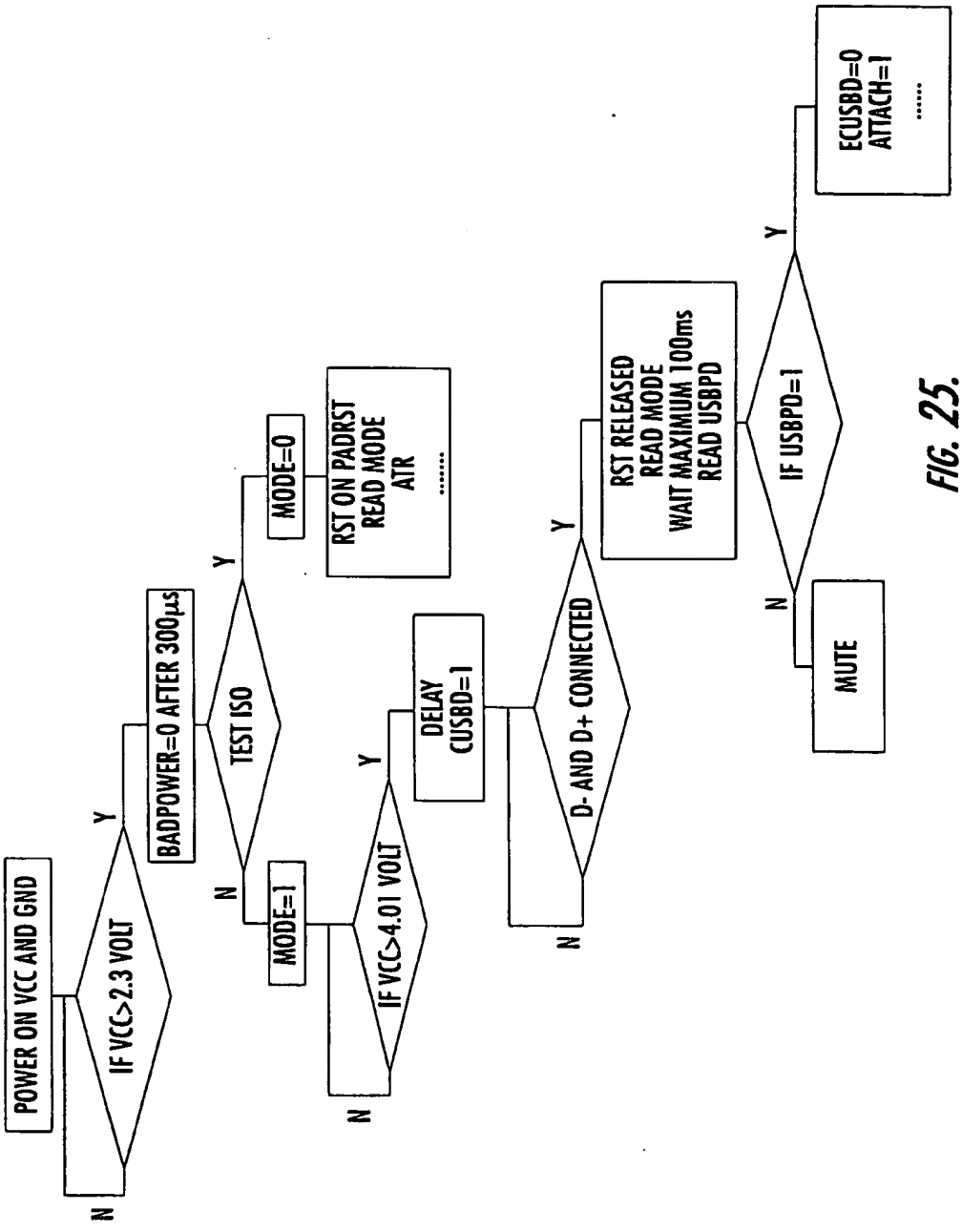
POWER ON VCC AND GND
IF VCC>2.3 VOLT
N
Y
BADPOWER=0 AFTER 300µs
TEST ISO
N
MODE=1
Y
MODE=0
RST ON PADRST
READ MODE
ATR
.....
IF VCC>4.01 VOLT
N
Y
DELAY
CUSBD=1
D- AND D+ CONNECTED
N
Y
RST RELEASED
READ MODE
WAIT MAXIMUM 100ms
READ USBPD
IF USBPD=1
N
MUTE
Y
ECUSBD=0
ATTACH=1
.....

FIG. 25.

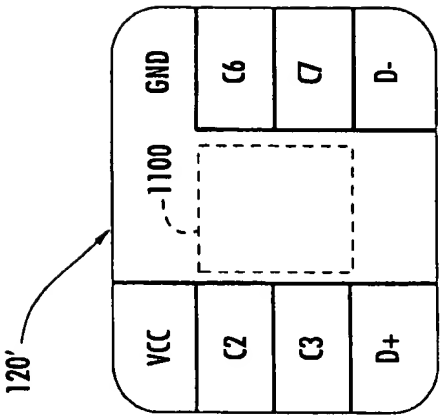


FIG. 26.

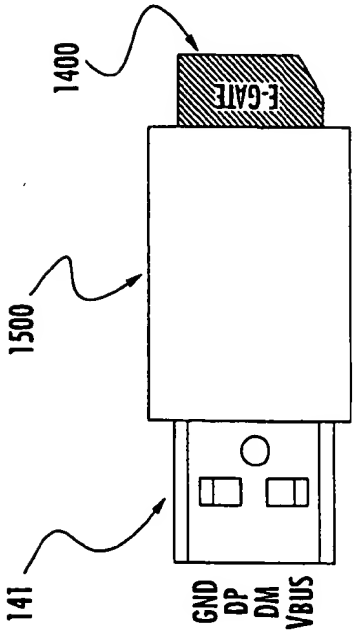
1400
E-GATE
1500
141
GND
DP
DM
VBUS

FIG. 28.

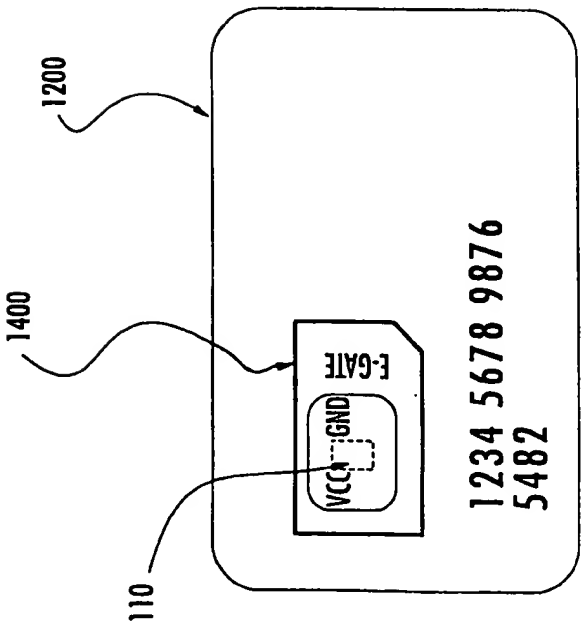
1200
1400
E-GATE
GND
VCC
1234 5678 9876
5482
110

FIG. 27.